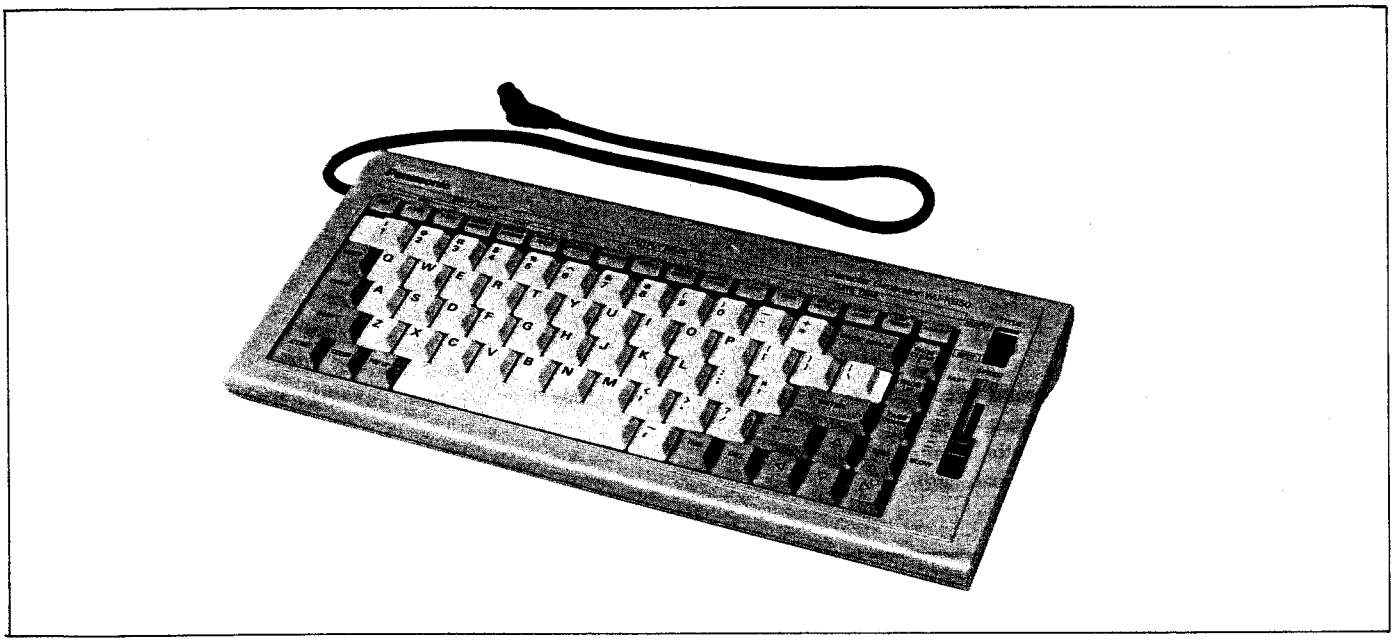
ORDER NO. AVS9206583C8

Service Manual

Character Generator

WJ-KB50



SPECIFICATIONS

Power Source :	9V DC
Backup Battery :	R6P or AA 1.5V × 3
Ambient Operating Temperature :	+5°C - +40°C (41°F - 104°F)
Dimensions :	350 (W) × 41 (H) × 155 (D) mm
	13 - 3/4" (W) × 1 - 5/8" (H) × 6 - 1/8" (D)
Weight (without batteries) :	710g (1.56 lbs.)

Weight and dimensions indicated are approximate.
Specifications are subject to change without notice.

Panasonic

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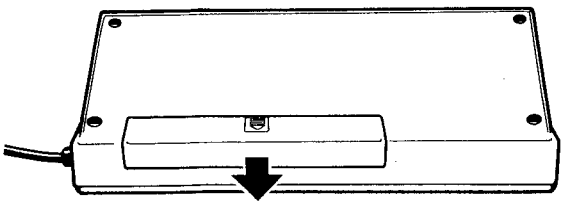
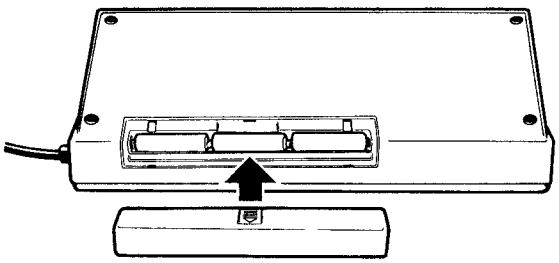
PREPARATION

Battery Installation for Backup Memories.

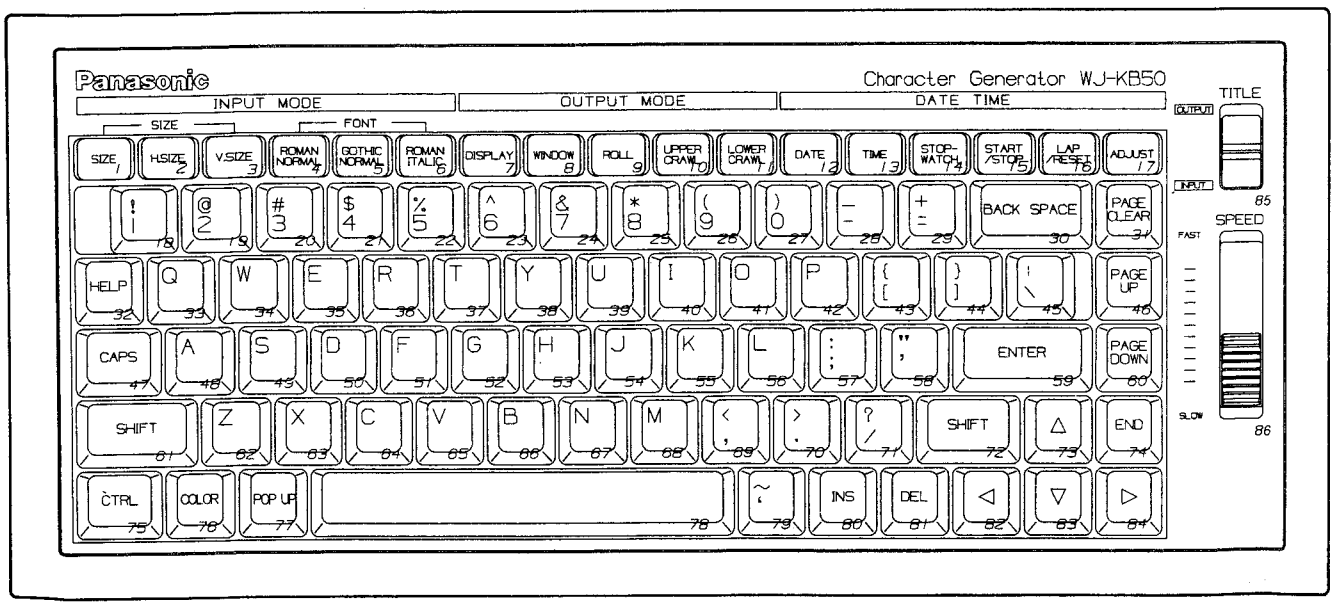
1. Slide the battery cover as shown below.
2. Check the polarity of the batteries and install three batteries (type R6P) in the compartment.



3. Move the cover back as shown below.



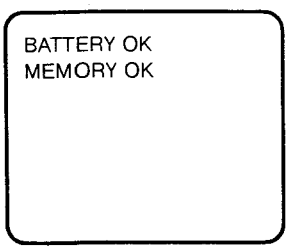
OPERATING CONTROLS AND THEIR FUNCTIONS



1. CONNECTIONS

Connect the interface plug to the specified AV Mixer after turning the power on. When this is done, the equipment starts to operate as follows :

1. "Character Generator" is displayed on the screen for two seconds.
2. Battery status and backup memories are displayed for two seconds.
3. The equipment runs in the mode selected by mode selection switch (85).



	Display
Battery Voltage	BATTERY OK
	BATTERY WARNING
	BATTERY EMPTY
Backup Memory	MEMORY OK
	MEMORY ERROR

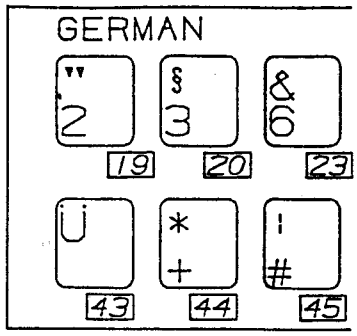
Caution :

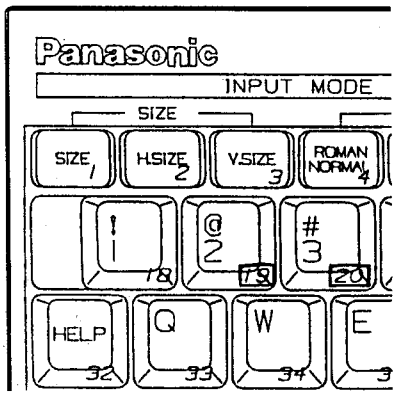
Replace the batteries when displayed "BATTERY WARNING" or "BATTERY EMPTY" on the screen.

Keyboard Setting

The characters arranged on the keyboard vary with the specifications of each country.
Before operating this character generator, select desired function from the keyboard.

1. Refer to page 7 chapter 4-13-2, in accordance with the instructions and select one of the functions ENGLISH / DEUTSCH / FRANCAIS / ITALIANO / ESPAÑOL.
   Initially, select the function of ENGLISH. When operating this function, it is not necessary to do above action.
2. Use key labels supplied as a standard accessory to modify the character keys.
   Refer to page 1 for the key arrangement on the keyboard.
   Remove the key label showing the key number, and put the label on the key where same number is positioned as specified.





2. MODE SELECTION

Set the mode selection switch (85) to either the INPUT or OUTPUT mode.

INPUT MODE :

This mode is intended for causing the title to input. When the switch is set to the INPUT mode, the title input job queue state is selected.

OUTPUT MODE :

This mode is intended for causing the title to appear on the screen. When the switch is set to the OUTPUT mode, standby state of title display is selected.

When this switch changed over, the displayed page remains unchanged. For details of page selection and setting, refer to Chapter 4-3 and 5-1, respectively.
To change over the mode selection switch to the INPUT mode from the OUTPUT mode during Roll, Crawl, Date, Time, or Stopwatch display or during operation, bring the operation to an end and place the unit in the standby mode, after which the mode should be changed over to the INPUT mode.

3. FUNCTIONS AND ACTIVE KEYS

3-1. Input Mode

The following keys are used in the input mode.

1. Input

Function	Operation Keys	Subfunction Keys	Reference
Character Input	(Character Key)	[SHIFT]	4-1
Special Character Input	[POP UP]	[↑], [↓], [←], [→], [ENTER]	4-2
Page Selection	[PAGE UP], [PAGE DOWN]		4-3
Insertion and Overwrite	[INS]		4-4
Capital Letter and Small Letter	[CAPS]		4-5
Cursor Movement	[↑], [↓], [←], [→]		4-6
Line Feed	[ENTER]		4-7
Deletion	[BACK SPACE], [DEL], [PAGE CLEAR]	[SHIFT], [CTRL]	4-8
Character Size	[SIZE], [H. SIZE], [V. SIZE]	[SHIFT], [CTRL]	4-9
Fount	[ROMAN NORMAL], [GOTHIC NORMAL], [ROMAN ITALIC]	[SHIFT]	4-10
Colour Setting	[COLOR]	[SHIFT], [CTRL]	4-11

2. Initial setting, Selected mode confirmation

Function	Operation Keys	Subfunction Keys	Reference
Fine Adjustment of Character Position	[CTRL], [SPACE], [↑], [↓], [←], [→]		4-12
Selected Mode Confirmation	[HELP]	[CTRL]	4-13
Date Display Mode Selection	[CTRL], [DATE]		4-14
Time Display Mode Selection	[CTRL], [TIME]		4-15
Second Adjustment	[SHIFT], [ADJUST]		4-16
Date and Time Adjustment	[CTRL], [ADJUST]	[↑], [↓], [←], [→]	4-17

3-2. Output Mode

The following keys are used in the output mode.

Function	Operation Keys	Subfunction Keys	Reference
Page Setting	(Numeral Character)	[SHIFT]	5-1
Display	[DISPLAY]		5-2
Scroll	[↑], [↓], [←], [→]		5-3
Wipe	[SHIFT], [↑], [↓], [←], [→]		5-4
Window Wipe	[WINDOW]	[SHIFT]	5-5
Roll	[ROLL]	[SPACE], [END], [CTRL]	5-6
Crawl	[UPPER CRAWL], [LOWER CRAWL]	[SPACE], [END], [CTRL]	5-7
Date Display	[DATE]		5-8
Time Display	[TIME]		5-8
Stopwatch Display	[STOP WATCH]	[START/STOP], [LAP/RESET]	5-9
Speed Adjustment	Speed Control Lever		5-10

4. INPUT MODE FUNCTION

4-1. Character Input

1) Character Keys

The characters arranged on the keyboard vary with the specifications of each country. Refer to page 11 through 12 for a list of character keys.

Initially, select the function of ENGLISH.

2) Method of Character Input

1. Common Input

When the character key is pressed while holding the [SHIFT] key, the upper case of character on the key is displayed on the screen, and when the character key is pressed after releasing the [SHIFT] key, the lower case of character on the key is displayed on the screen.

2. Capital Letters Function

To output capital letters, press alphabetic keys while holding the [CAPS] key.

For further information, see the tables below.

i) English, Spanish and Italian

		CAPS Released	CAPS Locked
Alphabetic Character	Common	Small Letter	Capital Letter
	+SHIFT Key	Capital Letter	Small Letter
Other Characters	Common	Lower Case	Lower Case
	+SHIFT Key	Upper Case	Upper Case

Press the [CAPS] key to set the position CAPS locked, and press the key once again to release the setting.

ii) German and French

		CAPS Released	CAPS Locked
Alphabetic Character	Common	Small Letter	Capital Letter
Other Characters	Common	Lower Case	Upper Case

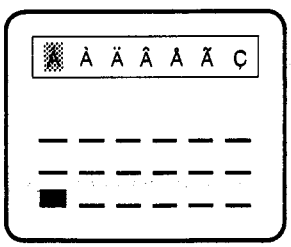
When the [CAPS] key is pressed, the CAPS function is locked. To clear the CAPS function, press the [SHIFT] key.

3. Dead Keys'
   Used to add an accent symbol to the character on the keyboard. Even when a dead key is pressed, neither a character appears nor the cursor moves. When a character key, to which you want to add an accent symbol, is pressed, the accent added character is displayed.
   But when the character key, to which an accent cannot be added, is pressed, the character appears without any accent symbol.
   See page 11 and 12 for details of Dead Keys positions.

KEYBOARD	ALL POSSIBLE DEAD KEY COMBINATIONS
ENGLISH	DEAD KEYS NOT SUPPORTED
GERMAN	á é í ó ú É à è ì ò ù
FRENCH	ä ë ï ö ü ÿ Ä Ö Ü â ê î ô û
SPANISH	ä ë ï ö ü ÿ Ä Ö Ü á é í ó ú É à è ì ò ù â ê î ô û
ITALIAN	DEAD KEYS NOT SUPPORTED

4-2. Special Character Input

1. Press the [POP UP] Key. Now, a pop-up window appears with the character frequently used.
   Press the [POP UP] Key to cancel the desired function or erase the pop-up window.
2. A pop-up window appears at the upper part of the screen with the cursor positioned at the lower part of the screen, or it appears at the lower part of the screen with the cursor positioned at the upper part of the screen.
3. While the menus are shown, use the arrow keys [↑] [↓] [←] [→] to move the highlight bar to a desired character.
   Then press the [ENTER] key to display the desired character where the cursor is positioned, and the pop-up window is now erased.



4. See page 13 for the details shown on the menu in the pop-up window.

4-3. Page Selection

1. Press the [PAGE UP]key to move the page forward and press the [PAGE DOWN] to move the page back.
2. When moving a page forward, page 1 comes next to page 10, and when moving a page back, page 10 comes next to page 1.
3. When the page is changed, page number is displayed for 1 second at the upper left of the screen, after which the contents of that page are displayed.

4-4. Insertion and Overwrite

1. Press the Insert Key [INS] to mutually set the Insert mode and the Overwrite mode.
2. Initially, select the Overwrite mode.
3. In the Overwrite mode, the cursor blinks.
   In the Insert mode, the cursor is placed in the character inverted state, and it does not blink for that reason.

4-5. Capital Letter and Small Letter

1. Press the Capital Letters Key [CAPS] to mutually set the Capital Letter Input mode and Small Letter Input mode.
   Refer to chapter 4-1-(2) when operating the keyboard with GERMAN or FRENCH specified.
2. Initially, select the small letter input mode.
3. The height of the cursor is reduced in the Small Letter mode, and the cursor becomes taller as before in the Capital Letter mode.

4-6. Cursor Movement

1. Press the arrow keys [↑] [↓] to feed the cursor one line, and press the arrow keys [←] [→] to move the cursor one character to the desired direction.
2. The cursor is positioned at the upper left corner of the screen initially.
3. Keep on pressing the above keys, moves the cursor continuously.
4. The cursor does not move further from the top or bottom or from the left or right end of the screen.

4-7. Line Feed

1. In the overwrite mode, press the [ENTER] key to move the cursor to the head of the next line.
   When the cursor is positioned on the last line, press the [ENTER] to move the cursor to the head of the last line.
2. In the Insert mode, press the [ENTER] key to open a new line. Now, the sentence after the cursor is inserted between that position and the next line, and the last line is deleted.
   Execute the above function in the last line, to delete the sentence after the cursor and move the cursor to the head of the last line.
3. The character which does not fit within end of the lowermost line on the display, such characters are inserted at the head of that line.

4-8. Deletion

1) Back Space Key
   1. Press the [BACK SPACE] key to delete the character positioned immediately before the cursor and to fill the blank with one sentence after the cursor on the line.
   2. This is invalid when the cursor exists at the head of the line.

2) Delete
   1. Press the Delete Key [DEL] to delete the character where the cursor is positioned and to fill the blank with only one space after the cursor. However, it does not fill the blank extending over the line where the cursor is positioned.
   2. Press the [DEL] key while holding [SHIFT] key to delete the entire line where the cursor is positioned and move one line up. The cursor returns to the head of the line.
      Refer to the key sequence "[SHIFT] + [DEL]" for further information.

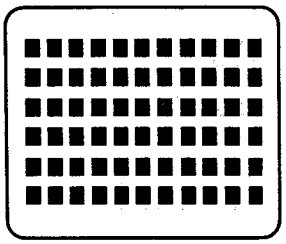
3) Page Clear
   1. Press [SHIFT] + [PAGE CLEAR] to erase all the contents of the currently selected page on the screen.
   2. Press [CTRL] + [PAGE CLEAR] to erase all the contents of ten pages, and the cursor returns to the top of the first page.

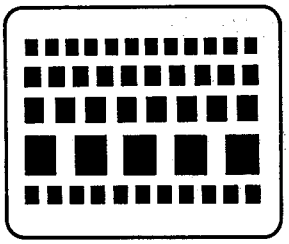
4-9. Character Size

1. Characters come in four sizes. Press the corresponding function key to change the display from one to another by toggle operation.

   ┌→ SMALL → MEDIUM → LARGE → EXTRA LARGE ┐
   └──────────────────────────────────────┘

2. Initially, the medium size is selected.
3. Press the [SIZE] key to change the row and column of the character size on the selected page.
4. Press the [H.SIZE] key to change the column of the character size on the selected page.
5. Press the [V. SIZE] key to change the row of the character size on the selected page.
6. Press [SHIFT] + [SIZE] to change the row and column of the character size on the selected line where the cursor is positioned.
7. Press [SHIFT] + [H. SIZE] to change the column of the character size on the selected line where the cursor is positioned.
8. Press [SHIFT] + [V. SIZE] to change the row of the character size on the selected line where the cursor is positioned.
9. When the [SIZE] key is pressed with character size mixed, the row and column of the character size is changed by toggle operation from the current size of each character.
   Similarly, when the [H. SIZE] key is pressed, only the column of character size is changed, and when the [V. SIZE] is pressed, only the row of character size is changed.

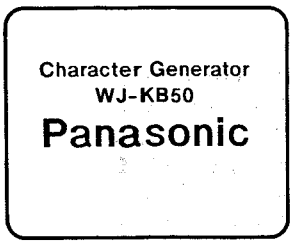


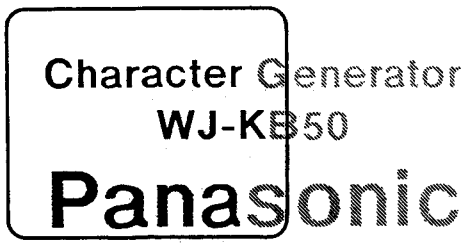


10. When the character sizes are mixed, press [CTRL] + [SIZE] to change the row and column into medium size where the characters exist on the selected page.
11. When the character sizes are mixed, press [CTRL] + [H. SIZE] to change the column into medium size where the characters exist on the selected page.
12. When the character sizes are mixed, press [CTRL] + [V. SIZE] to change the row into medium size where the characters exist on the selected page.
13. When changing the character size, the following numbers of character may be displayed in one page.
    Numbers below indicated are approximate as the character varies depending up on the chosen character style, capital and small letters, character itself, etc.

CHARACTER SIZE	MAX NUMBERS OF CHARACTERS
SMALL	20 CHARACTERS × 12 ROWS
MEDIUM	11 CHARACTERS × 6 ROWS
LARGE	7 CHARACTERS × 4 ROWS
EXTRA LARGE	5 CHARACTERS × 3 ROWS

14. As the character size is increased, a part of the title only is displayed on the screen in the expanded size. But the portion of data not displayed is also saved. When the character size is reduced, the original character is displayed on the screen once again. At the time of title display, only the region displayed currently on the screen is displayed.





4-10. Fount (Font)

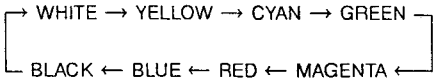
1. Press the [ROMAN NORMAL] key to choose the Roman character.
2. Press the [GOTHIC NORMAL] key to choose the Gothic character.
3. Press the [ROMAN ITALIC] key to choose the Italic character.
4. Press [SHIFT]+[ROMAN NORMAL] to, choose the Roman character on the selected line where the cursor is positioned.
5. Press [SHIFT]+[GOTHIC NORMAL] to choose the Gothic character on the selected line where the cursor is positioned.
6. Press [SHIFT]+[ROMAN ITALIC] to choose the Italic character on the selected line where the cursor is positioned.

4-11. Colour Setting

Caution :

The functions below are not available when used in combination with the specified AV Mixer in this moment. The colour setting is made by specified AV Mixer.

1. Colour setting becomes valid when this mode is turned on. Initially, the colour setting is off.
2. Press the [COLOR] key to change the character colour over the entire screen.
3. Press [SHIFT]+[COLOR] to change the character colour on the line where the cursor is positioned.
4. Usable character colours are eight. These character colours change in the sequence shown below. Initially, the colour is white.



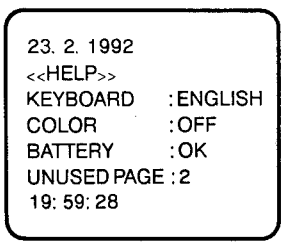
5. When the character colours are mixed on the line, character colours change in the sequence shown above when the [COLOR] key is pressed.
6. Press [CTRL]+[COLOR] to turn the character colours all white whatever colour is shown on the screen.

4-12. Fine Adjustment of Character Position

1. Press [CTRL]+[↑] to shift the screen two dots upward.
2. Press [CTRL]+[↓] to shift the screen two dots downward.
3. Press [CTRL]+[←] to shift the screen one dot to the left.
4. Press [CTRL]+[→] to shift the screen one dot to the right.
5. Initially, characters are in positions requiring no fine adjustment. Fine adjusted character positions are saved.
6. Finely adjustable range is ±10 dots vertically and ±12 dots horizontally from the initial position.
7. Press [CTRL]+[SPACE] to cancel fine adjustment, and the character position becomes the initially set position.

4-13. Selected Mode Confirmation

1. Press the [HELP] key to cause the contents below on the screen.

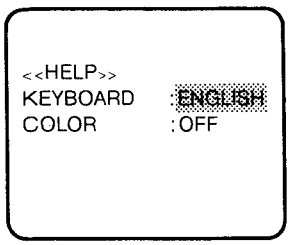


- Keyboard function (ENGLISH / DEUTSCH / FRANÇAIS / ITALIANO / ESPAÑOL)
- Colour key function (ON/OFF)
- Battery Level (OK/WARNING/EMPTY)
- Unused Page Number (1-0)
- Date
- Time

Press the [HELP] key to return the screen display to the original screen.

2. When the [CTRL] + [HELP] keys are pressed, the help screen appears so that keyboard setting or colour key setting can be changed. Now, setting change can be made by using [↑], [↓], [←] and [→] keys. After setting, when the [ENTER] key is pressed, setting change is executed and the help screen is cleared.

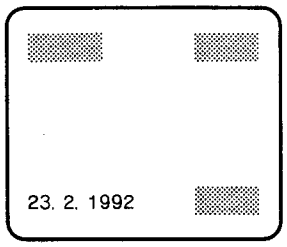
When setting change is not made, the help screen disappears upon pressing the [CTRL] + [HELP] keys.



4-14. Date Display Mode Selection

1. Press [CTRL]+[DATE] to select Date Display mode.
2. Press the [DATE] key to mutually select three display modes sequentially.
   Press the arrow keys [↑] [↓] [←] [→] to select the display position at the four corners of the screen.
   Press [ENTER] key to execute setting change, and the mode selected is cleared.
   When not executing the setting change, the date display selection mode can be cleared without changing the setting by pressing the [CTRL] + [DATE] keys.

Display Mode
23. 2. 1992
FEB. 23. 1992
1992. 2. 23

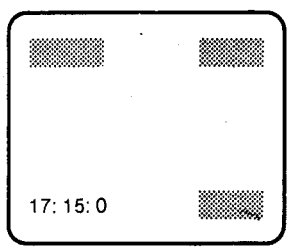


3. Initially, the display mode is such as 23. 2. 1992.
4. The display position is initially at the lower left corner of the screen.

4-15. Time Display Mode Selection

1. Press [CTRL]+[TIME] to select Time Display Mode.
2. Press the [TIME] key to alternately select two display modes.
   Press the arrow keys [↑] [↓] [←] [→] to select the display position at the four corners of the screen.
   Press the [ENTER] key to execute setting change and to return to the original screen.
   If the setting change is not executed, press [CTRL] + [TIME] to return to the original screen without the setting change.

Display Mode
17 : 15 : 0
PM 5 : 15 : 0



3. Initially, the display mode is such as 17 : 15 : 0.
4. Initially, the display position is at the lower left corner of the screen.

4-16. Second Adjustment

1. Press [SHIFT]+[ADJUST] to select the second correction mode.
2. When the [ADJUST] key is pressed in this mode, the time should be corrected to 0 second when it is between 0 and 29 seconds, but it should be advanced one minute with seconds adjusted to 0 when seconds are between 30 and 59.
3. Press [SHIFT]+[ADJUST] or [ENTER] to return to the original screen.

4-17. Date and Time Adjustment

1. Press [CTRL]+[ADJUST] to select the date and time setting mode.
2. Use arrow keys [←] [→] to move the cursor to desired position and arrow keys [↑] [↓] to adjust the number. After completing the setting, press the [ENTER] key to execute desired setting and return the original screen. If setting is not changed, press the [CTRL] + [ADJUST] keys to return to the original mode from the date and time setting mode without changing the setting.
3. Initially, the setting is made 0 : 0 : 0 and 1. 1. 1990.
4. Select the following display sequence to adjust the date.

→ JAN ↔ FEB ↔ MAR ↔ APR ↔ MAY ↔ JUN ←
→ DEC ↔ NOV ↔ OCT ↔ SEP ↔ AUG ↔ JUL ←

Note : It is availabel to adjust the date between year of 1990 and 2089.

5. OUTPUT MODE FUNCTION

5-1. Page Setting

1) Page setting for Display, Scroll, Wipe and Window Wipe
   1. When a numeral key is pressed with the screen in the standby state, the page corresponding to the numeral key is set.
      No display is made for page setting.
      If the title is being displayed, the page corresponding to the numeral key is displayed.
   2. Press the numeral key [0] to select page 10.
   3. Initially, set page to page 1.
   4. The last pressed numeral key is valid when the numeral key is pressed more than twice.
2) Page setting for Roll and Crawl
   1. When [SHIFT]+Numeral keys are pressed two times, the 1st pressing is set for the beginning page, and the 2nd pressing for the ending page. No display of page setting is made, however.
   2. When the beginning page number is lager than the ending page number, pages sequentially from the beginning page till 10th page are displayed first, and the 1st page till the ending page is then displayed.

→ Ending Page Beginning Page →
← Page 1 ← Page 10 ←

3. Initially, the beginning page is page 1, and the ending page is page 10.
4. When the [SHIFT] + Numeral keys are pressed three times or more, the last two numbers are valid.

5-2. Display

1. Press the [DISPLAY] key to display the title of the chosen page when the screen is in the standby mode.
2. Press the [DISPLAY] key to erase the title when the title is displayed on the screen.
3. When the title is displayed on the screen, press the numeral key to change the page corresponding to the numeral key.

5-3. Scroll

1. Press the arrow key when the screen is in the standby mode, to scroll the title of the selected page in the direction of an arrow. The title stops in the centre of the screen.
2. Keep on pressing the arrow key when the screen is in the standby mode, to scroll the title of the selected page in the direction of an arrow. The title scrolls out without stopping in the centre of the screen.
3. Press the arrow key when the title is displayed on the screen to scroll out the title in the direction of an arrow.

5-4. Wipe

1. Press [SHIFT]+Arrow keys in the standby mode, to begin to wipe in the title selected.
   The title appears in the same direction chosen by pressing the arrow key.
2. Press [SHIFT]+Arrow keys when the title is displayed on the screen, to begin to wipe out the title displayed.
   The title is erased from the same direction selected by pressing the arrow key.

5-5. Window Wipe

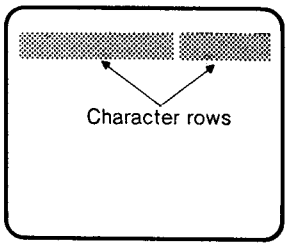
1. Press the [WINDOW] key in the standby mode, to begin to wipe in the title selected.
   The title appears from the centre of the screen toward the four corners.
2. Press the [WINDOW] key when the title is displayed on the screen, to begin to wipe out the title displayed.
   The title is erased from the four corners toward the centre of the screen.
3. Press [SHIFT]+[WINDOW] keys in the standby mode, to begin to wipe in the title selected.
   The title appears from the four corners toward the centre of the screen.
4. Press [SHIFT]+[WINDOW] keys when the title is displayed on the screen, to begin to wipe out the title displayed.
   The title is erased from the centre toward the four corners of the screen.

5-6. Roll

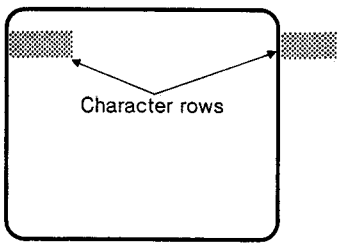
1. Press the [ROLL] key in the standby mode, to continuously make scroll in the beginning page through scroll out of the ending page in the upper direction.
2. Press the [ROLL] key when the title is displayed on the screen. Now, the title begins to roll after erasing the title once on the screen.
3. Press [CTRL]+[ROLL] keys in the standby mode. Now, the title begins to function as item 1) above continuously.
4. Press [CTRL]+[ROLL] keys when the title is displayed on the screen. Now, the title begins to function as item 1) above continuously after erasing the title once on the screen.
5. Press the [SPACE] key to temporarily stop while the roll is being made.
   Then press the key once again to clear the function and the title begins to roll.
6. Press the [END] key while the roll is being made, to erase the title for finishing.

5-7. Crawl

1. Press [UPPER CRAWL] key in the standby mode, to begin the crawl the title selected. When this is done, operation from the top line of the beginning page to the bottom line of the ending page is continuously scrolled one line at a time toward the left at the upper end of the screen.



2. Press the [LOWER CRAWL] key in the standby mode, to continuously scroll from the top line of the beginning page to the bottom line of the ending page one line at a time toward the left at the lower end of the screen.
3. Press the [CTRL] + [UPPER CRAWL] keys in the standby mode, to repeat the operation of item 1) above.
4. Press the [CTRL] + [LOWER CRAWL] keys to repeat the operation of item 2) above.
5. When the title is displayed on the screen, the title is erased once, and then the scroll begins.
6. When the character colour of the line now under crawl and the character colour of the next line differ, the scroll in starts as from the next line after scroll of the current line.



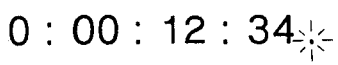
7. When the [SPACE] key is pressed in the process of crawl, the title is temporarily stopped and when the key is pressed again, the temporary stop is released.
8. When the [END] key is pressed in the process of crawl, the title is erased, to finish the crawl.

5-8. Date and Time Display

1. Press the [DATE] key repeatedly to display and to erase the date alternately.
2. Press the [TIME] key repeatedly to display and to erase the time alternately.
3. When the date or time is combined with the title, the date and time are preferentially displayed.
4. When the date or time is displayed on the screen, only the [DISPLAY] key is valid, and no function such as scroll, wipe, window wipe, roll and crawl are made.
5. The display of date and time is invalid during the display of the stopwatch.

5-9. Stopwatch Display

1. Press the [STOP WATCH] key to display the stopwatch at the lower right corner of the screen.
   The stopwatch disappears when the key is pressed once again.
2. When the stopwatch is combined with the title, the stopwatch is preferentially displayed.
3. Press the [START/STOP] key repeatedly to start and to stop the stopwatch alternately.
4. Press the [LAP/RESET] key while the stopwatch is being stopped, to reset the stopwatch time.
5. Press the [LAP/RESET] key while the stopwatch is in operation. The stopwatch continues to operate while the lap mark (.) is blinking, although the display of the stopwatch discontinued.



6. Press the [LAP/RESET] key while the stopwatch is in the lap state, to release the lap operation.
7. When the stopwatch is displayed on the screen, only the [DISPLAY] key is valid, and no function such as scroll, wipe, window wipe, roll and crawl are made.
8. The display of stopwatch is invalid during the display of the date and time.
9. The stopwatch is displayed up to 9 hours 59 minutes 59 seconds 99.

5-10. Speed Adjustment

1. The movement speed of the functions such as scroll, wipe, window wipe, roll and crawl are adjustable by adjusting Speed Control Lever (86).
2. The speed adjustment is effective while the title output is being made.

CHARACTER KEYS

KEY NO.	ENGLISH		GERMAN		FRENCH		SPANISH		ITALIAN	
	LOWER CASE	UPPER CASE	LOWER CASE	UPPER CASE	LOWER CASE	UPPER CASE	LOWER CASE	UPPER CASE	LOWER CASE	UPPER CASE
16										
17										
18	1	!	1	!	&	1	1	!	1	!
19	2	@	2	"	é	2	2	"	2	"
20	3	#	3	§	"	3	3	·	3	£
21	4	$	4	$	'	4	4	$	4	$
22	5	%	5	%	(	5	5	%	5	%
23	6	^	6	&	-	6	6	&	6	&
24	7	&	7	/	è	7	7	/	7	/
25	8	*	8	(	_	8	8	(	8	(
26	9	(	9	)	ç	9	9	)	9	)
27	0	)	0	=	à	0	0	=	0	=
28	-	_	ß	?	)	°	'	?	'	?
29	=	+	' ** DK	` ** DK	=	+	¡	¿	ì	^
30										
31										
32										
33	q	Q	q	Q	a	A	q	Q	q	Q
34	w	W	w	W	z	Z	w	W	w	W
35	e	E	e	E	e	E	e	E	e	E
36	r	R	r	R	r	R	r	R	r	R
37	t	T	t	T	t	T	t	T	t	T
38	y	Y	z	Z	y	Y	y	Y	y	Y
39	u	U	u	U	u	U	u	U	u	U
40	i	I	i	I	i	I	i	I	i	I
41	o	O	o	O	o	O	o	O	o	O
42	p	P	p	P	p	P	p	P	p	P
43	[	{	ü	Ü	^ ** DK	¨ ** DK	` ** DK	^ ** DK	è	é
44	]	}	+	*	$	£	+	*	+	*
45	\	¦	#	¦	*	µ	ç	Ç	ù	§
46										
47										
48	a	A	a	A	q	Q	a	A	a	A

** DK : Dead Key

KEY NO.	ENGLISH		GERMAN		FRENCH		SPANISH		ITALIAN	
	LOWER CASE	UPPER CASE	LOWER CASE	UPPER CASE	LOWER CASE	UPPER CASE	LOWER CASE	UPPER CASE	LOWER CASE	UPPER CASE
49	s	S	s	S	s	S	s	S	s	S
50	d	D	d	D	d	D	d	D	d	D
51	f	F	f	F	f	F	f	F	f	F
52	g	G	g	G	g	G	g	G	g	G
53	h	H	h	H	h	H	h	H	h	H
54	j	J	j	J	j	J	j	J	j	J
55	k	K	k	K	k	K	k	K	k	K
56	l	L	l	L	l	L	l	L	l	L
57	;	:	ö	Ö	m	M	ñ	Ñ	ò	ç
58	'	"	ä	Ä	ù	%	' ** DK	¨ ** DK	à	°
59										
60										
61										
62	z	Z	y	Y	w	W	z	Z	z	Z
63	x	X	x	X	x	X	x	X	x	X
64	c	C	c	C	c	C	c	C	c	C
65	v	V	v	V	v	V	v	V	v	V
66	b	B	b	B	b	B	b	B	b	B
67	n	N	n	N	n	N	n	N	n	N
68	m	M	m	M	,	?	m	M	m	M
69	,	<	,	;	;	.	,	;	,	;
70	.	>	.	:	:	/	.	:	.	:
71	/	?	-	_	!	§	-	_	-	_
72										
73										
74										
75										
76										
77										
78										
79	‘	~	<	>	<	>	<	>	<	>
80										

** DK : Dead Key

Menu in the POP UP WINDOW

Á	À	Ä	Â	Å	Ã	Ç
É	È	Ë	Ê	Í	Ì	Ï
Î	Ñ	Ó	Ò	Ö	Ô	Õ
Š	Ú	Ù	Ü	Û	Ŵ	Ý
Ÿ	Ŷ	Ž	Æ	Œ	IJ	Ø
Þ	Ð	SPACE	SPACE	SPACE	SPACE	SPACE
á	à	ä	â	å	ã	ç
é	è	ë	ê	í	ì	ï
î	ñ	ó	ò	ö	ô	õ
š	ú	ù	ü	û	ŵ	ý
ÿ	ŷ	ž	æ	œ	ij	ø
þ	ð	ß	SPACE	SPACE	SPACE	SPACE
Γ	Σ	Φ	Ω	α	β	δ
θ	μ	π	σ	τ	φ	SPACE
.	,	:	;	•	/	\

?	!	¿	¡	!!	—	-
_	(	)	[	]	{	}
«	»	‘	’	“	”	"
+	−	×	÷	=	<	>
±	≤	≥	≡	≈	2	n
♂	♀	∞	√	⌠	⌡	SPACE
$	£	¥	Pt	¢	ƒ	%
°	°C	°F	′	″	SPACE	SPACE
#	&	*	†	§	¶	¦
↑	↓	←	→	↕	↨	↔
@	©	®	TM	º	ª	☞
~	ˆ	~	▲	▼	◀	▶
☺	☻	☼	♥	♦	♣	♠
♪	♬	•	◘	○	◙	SPACE
½	¼	¾	SPACE	SPACE	SPACE	SPACE

ADJUSTMENT PROCEDURE

1. Test Equipment Required

- Digital AV Mixer (WJ-MX12 or WJ-MX50)
- Colour Video Monitor
- Frequency Counter

2. Disassembling Procedure for Adjustment

- Slide the battery cover. Remove four screws on the bottom cover and remove the top cover. (Fig 1)

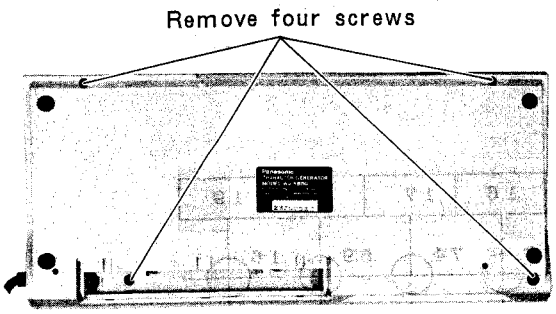


Fig. 1

- Remove five screws holding key board.

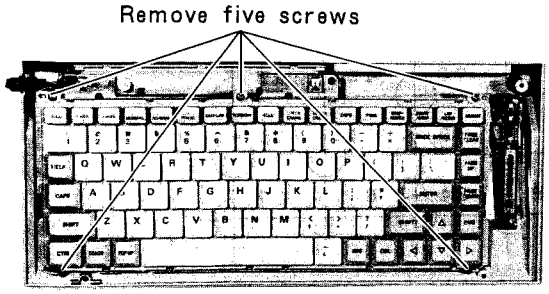


Fig. 2

- Remove four screws holding Digital Board and turn the board inside out. (Fig. 3)

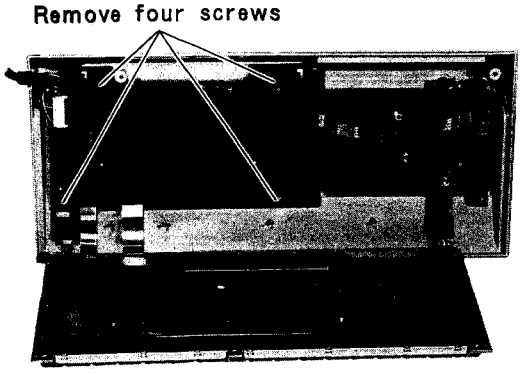
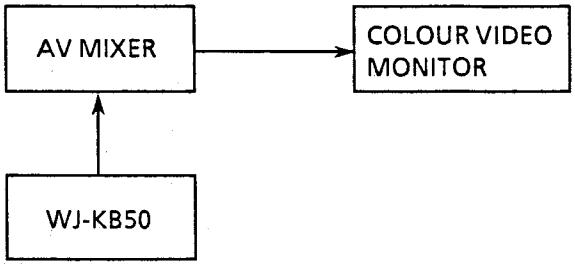


Fig. 3

3. Connection

- Connect the coaxial cable between REC OUT connector on the rear panel of AV mixer and VIDEO IN connector of Colour video monitor.
- Terminate the Colour video monitor with 75 ohms.
- Connect Character Generator WJ-KB50 to AV mixer.



4. Adjustment

- Refer to Location of Test Point and Adjusting Control below.

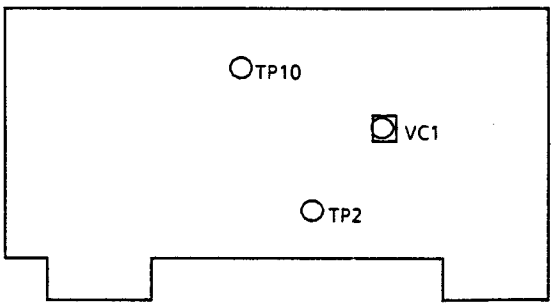
(1) Dot clock adjustment

Test point :	**TP10**	**Digital board**
Adjust :	**VC1**	**Digital board**

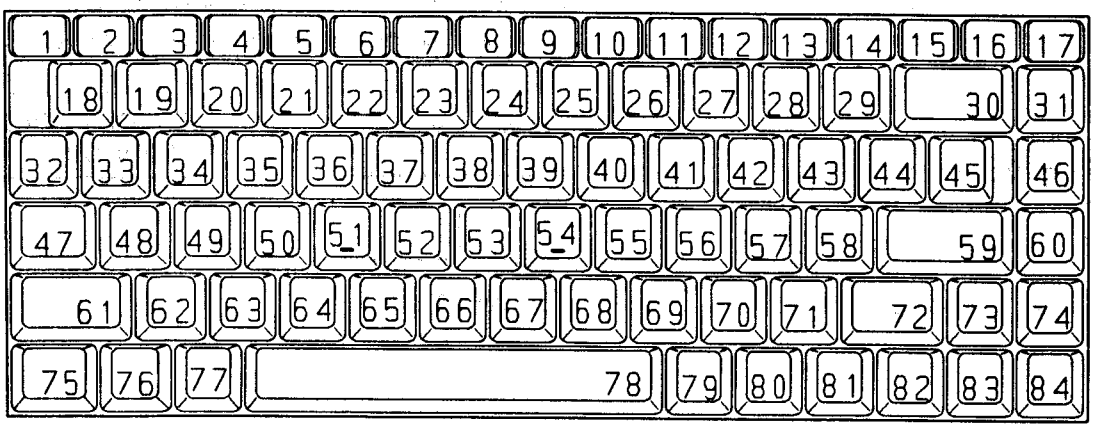
- Connect TP2 on Digital board to the ground.
- Connect the frequency counter to TP10 on Digital board.
- Adjust VC1 for 14.53 MHz ± 0.07 MHz.
- Disconnect TP2 from the ground.

(2) Location of Test Point of Adjusting Control.

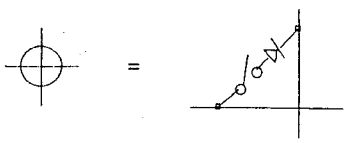
Digital board



KEY MATRIX



No.	9	10	11	12	13	14	15	16	17	18	19
1	18	34	4	8	35	11	71	38	74	59	16
2	32	33	20	24	36	28	70	53	82	72	15
3	47	48	5	25	50	27	57	67	81	29	30
4	75	62	21	26	51	43	56	52	58	44	
5	61	49	22	39	64	42	54	66	80	73	
6	76	63	23	40	65	41	55	37	79	45	46
7	1	19	7	9	77	13	69		83	14	31
8	2	3	6	10		12	68	78	84	60	17



CHIP COMPONENTS

1. Chip Transistor

The transistor number is indicated on the top surface of the chip transistor using two alphabet letters or one numerical and two alphabet letters.

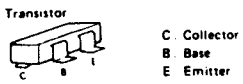
Transistor Number

Letter	Transistor No.	Letter	Transistor No.
A	2SB709	X	2SD602A
B	2SB709A	Y	2SD601
C	2SB710	Z	2SD601A
D	2SB710A	1Z	2SD1030
E	2SA1022	1N	2SK199
F	2SA1034	1O	2SK198
H	2SA1035	1A	2SB799
I	2SB792	1B	2SB814
K	2SC2778	1C	2SB902
P	2SD814	1F	2SK321
Q	2SD813	1L	2SK247
R	2SC2480	1K	2SK316
S	2SC2405	1M	2SJ84
T	2SC2406	1T	2SC3077
U	2SC2404	1X	2SC2845
V	2SC2295	2B	2SK374
W	2SD602	2C	2SK116

Example

WQ ⟶ 2SD602 – Q
YQ ⟶ 2SD601 – Q
1BS ⟶ 2SB814 – S

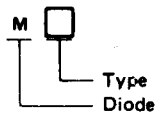
Appearance and Symbols



	1	2	3
Except 2SK199	Drain	Source	Gate
2SK199	Gate	Drain	Source

2. Chip Diode

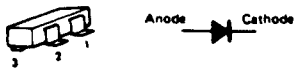
The diode number is indicated on the top surface of the chip diode using Two alphabet letters.



Diode Number

Letter	Diode No.	Letter	Diode No.
MA	MA151A	MI	MA152K
MB	MA152A	MK	MA28W-B
MC	MA153	ML	MA28T-A
MD	MA28-A	MN	MA151WA
ME	MA28-B	MO	MA152WA
MF	MA28W-A	MT	MA151WK
MH	MA151K	MU	MA152WK

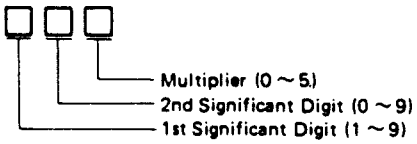
Appearance and Symbols



	1	2	3
MA28/28W/28T	–	Anode	Cathode
MA151K/152K	–	Anode	Cathode
MA151A/152A	–	Cathode	Anode
MA151WK/MA152WK	Anode	Anode	Cathode
MA151WA/MA152WA	Cathode	Cathode	Anode
MA153	Cathode	Anode	Common

3. Chip Resistor

The resistor value is indicated on the bottom surface of the chip resistor using three digit numbers.



EXAMPLE:

330 ⟶ 33×10^0 = 33 ohms
561 ⟶ 56×10^1 = 560 ohms
123 ⟶ 12×10^3 = 12 kohms

Note: Zero ohm resistor (jumper chip) is colored red or green.

4. Chip Capacitor

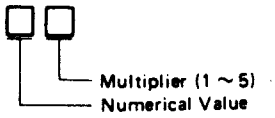
The capacitive value of replacement chip capacitors is indicated on the bottom surface. Original parts do not have value indication.

If the capacitive value is less than 100 pF, the value will be indicated by one or two digit number expressing the capacity directly in pF.

EXAMPLE:

0.5 ⟶ 0.5 pF 2.5 ⟶ 2.5 pF
75 ⟶ 0.75 pF 33 ⟶ 33 pF
1 ⟶ 1 pF 82 ⟶ 82 pF

If the capacitive value is 100 pF or greater, the value will be indicated by an alpha-numeric code. The letter precedes the number and expresses a numerical value to be multiplied by the number which follows.



Numerical Value

Letter	Value	Letter	Value
A	10	N	33
B	11	P	36
C	12	Q	39
D	13	R	43
E	15	S	47
F	16	T	51
G	18	U	56
H	20	V	62
J	22	W	68
K	24	X	75
L	27	Y	82
M	30	Z	91

* Letters I and O are not used

EXAMPLE:

A1 ⟶ $10 \times 10^1 = 100$ pF

N2 ⟶ $33 \times 10^2 = 3300$ pF

S3 ⟶ $47 \times 10^3 = 47000$ pF

5. Precautions in replacing the chip component

1 Make sure that the unit is turned OFF when replacing the chip

2 Use tweezers to prevent any damage to the chip surface

3 Do not re-use the chips after removal

4 Do not rub the electrode of chips

5 Do not subject the chips to excessive stress

6 It is recommended that a pencil-type soldering iron to be used

7 The solder whose diameter is less than 0.5 mm is recommended

8 Do not heat the chip beyond 3 seconds

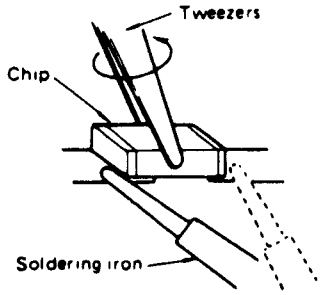
9 Maintain temperature control under 260°C (500°F) when soldering

5-1 Removal (Transistor, Diode, Resistor and Capacitor)

1 Add the solder to both ends of the chip (three leads for chip transistor).

2 While attaching the soldering iron to both ends of the chip (three leads for chip transistor) as shown below, remove the chip by turning it with tweezers

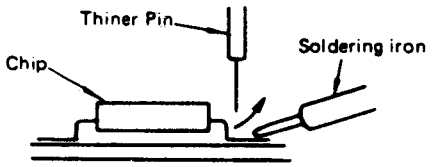
Note Be careful not to damage other chips



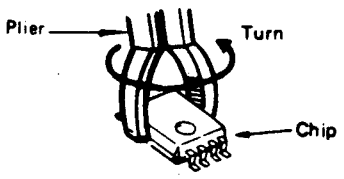
5-2 Removal (IC)

1. Add the solder wick and solder iron to each lead of the IC and remove solder.

2. Add the solder iron to each lead of the IC and left each lead of the IC using thiner pin.



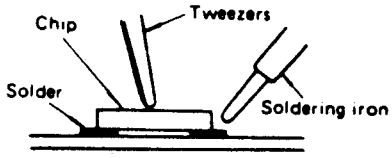
3. Remove IC turning it with plier.



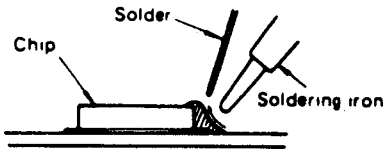
5-3 Mounting

1 Place the solder thinly on the chip mounting foil

2 Solder the chip temporarily while holding the chip with the tweezers

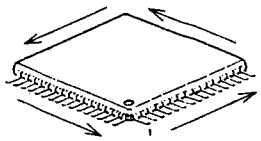


3. Solder both ends of chip (three leads for chip transistor)

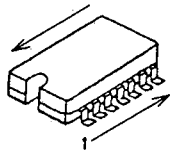


APPEARANCE OF IC, TRANSISTOR AND DIODE

T90CM40F2601
LZ95J16

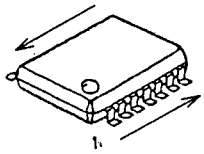


TC51832FL85
TC532000J009
TC8521AM
TC74HC273AF

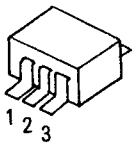


TC74AC138F
TC74AC139F
YWTC74AC04F
LC3564QM10

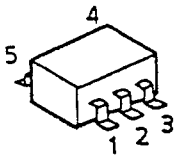
YWUPD74HC08G
LA7217
TC7W32F



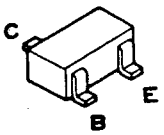
S8054ALBLMT1
S81250HGRDT1



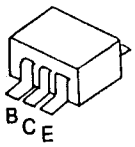
YWTC4S66F



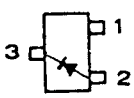
2SB1218A-QR



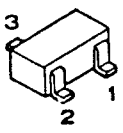
2SB767R



MA721
MA704



MA3150
MA3100-L



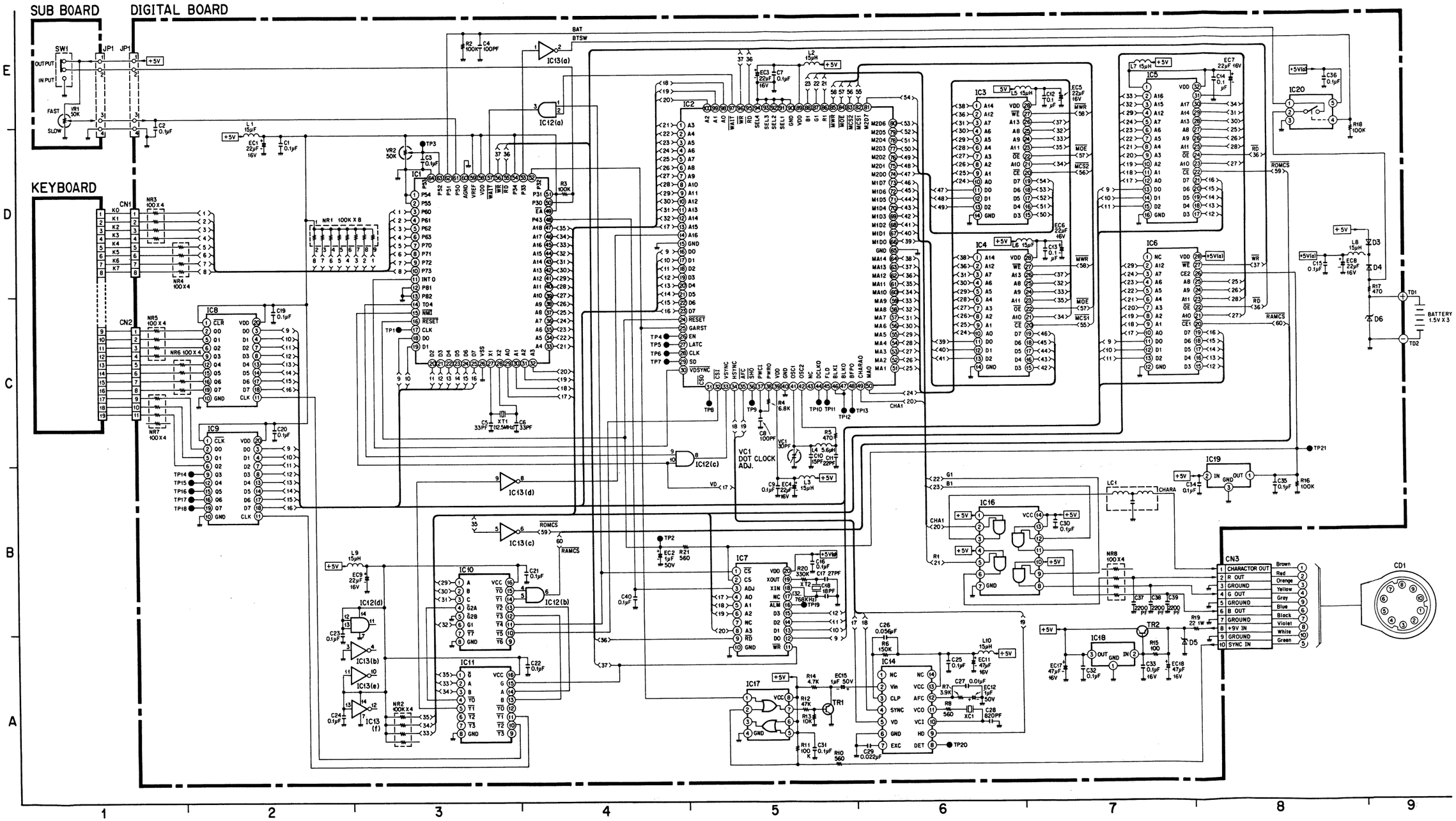
< VOLTAGES >

	IC1	IC2		IC1	IC2
Pin 1	0	0	Pin51	5.0	2.5
2	0	0	52	0	2.0
3	5.0	5.0	53	5.0	2.7
4	5.0	0	54	5.0	2.2
5	5.0	5.0	55	5.0	2.0
6	5.0	0	56	5.0	2.6
7	4.9	5.0	57	0	2.3
8	5.0	5.0	58	5.0	2.3
9	5.0	5.0	59	5.0	1.6
10	5.0	5.0	60	0	2.1
11	4.5	5.0	61	0	2.4
12	0	0	62	0	2.4
13	0	0	63	1.3	2.5
14	4.5	5.0	64	0	1.8
15	4.3	0	65		0
16	5.0	5.0	66		0.5
17	2.5	5.0	67		0.5
18	5.0	5.0	68		0.6
19	4.9	5.0	69		0.5
20	5.0	5.0	70		0.5
21	5.0	5.0	71		0.5
22	5.0	5.0	72		0.5
23	4.9	5.0	73		0.5
24	4.9	5.0	74		0.4
25	4.9	0	75		0.4
26	0	5.0	76		0.5
27	2.2	5.0	77		0.5
28	2.2	5.0	78		0.5
29	0	5.0	79		0.5
30	5.0	4.5	80		0.4
31	0	4.3	81		0.5
32	5.0	5.0	82		4.1
33	0	4.5	83		4.1
34	0	4.0	84		3.8
35	5.0	4.2	85		5.0
36	0	5.0	86		2.9
37	5.0	4.7	87		2.9
38	0	4.7	88		2.9
39	5.0	5.0	89		5.0
40	5.0	0	90		0
41	5.0	2.5	91		0
42	5.0	2.4	92		0
43	5.0	0	93		0
44	0	2.2	94		0
45	5.0	2.4	95		2.5
46	0	3.2	96		5.0
47	0	3.2	97		5.0
48	0	0.2	98		2.2
49	5.0	0.2	99		2.6
50	0	2.3	100		2.7

	IC3	IC4	IC5	IC6	IC7	IC8	IC9	IC10	IC11	IC12	IC13	IC14	IC16	IC17	IC18	IC19	IC20
Pin 1	1.8	1.8	5.1	0	5.1	5.0	5.0	2.0	0	5.1	5.0	0	5.1	0	0	5.0	0
2	2.4	2.4	0	2.0	5.0	5.0	5.0	2.0	0	5.0	0	2.4	0.1	4.3	6.9	5.1	1.7
3	2.4	2.4	0.9	3.0	0	5.0	5.0	2.3	0	5.1	0	2.9	0.1	5.1	5.1	0	0
4	2.7	2.7	2.0	1.9	2.6	5.0	5.0	0	0	5.1	5.1	4.0	5.1	0			0
5	2.0	2.0	3.0	2.3	2.1	5.0	5.0	0	5.0	5.1	0	4.3	3.2	5.1			5.0
6	2.2	2.2	1.9	2.5	2.6	5.0	5.0	0.9	5.1	5.1	5.1	0	3.2	5.1			
7	2.7	2.7	2.3	2.7	0	5.0	5.0	4.1	5.1	0	0	4.9	0	4.6			
8	2.6	2.6	2.5	2.6	2.7	5.0	5.0	0	0	4.5	0	5.0	3.2	5.1			
9	2.5	2.5	2.7	2.2	2.5	5.0	5.0	5.1	5.1	4.5	5.1	4.2	3.2				
10	2.3	2.3	2.6	2.6	0	0	0	5.1	5.1	4.3	0	4.1	5.1				
11	0.5	0.5	2.1	5.0	5.0	5.1	5.0	5.1	5.1	5.1	5.1	2.8	3.2				
12	0.5	0.6	2.6	5.0	5.0	5.0	5.0	5.1	5.1	5.1	0	2.1	3.2				
13	0.5	0.6	5.0	5.0	5.0	5.0	5.0	5.1	5.1	5.1	5.1	5.0	5.1				
14	0	0	5.0	0	5.0	5.0	5.0	5.1	5.1	5.1	5.1	0	5.1				
15	0.5	0.5	5.0	5.0	5.0	5.0	5.0	5.1	5.0								
16	0.5	0.5	0	5.0	0.5	5.0	5.0	5.1	5.1								
17	0.5	0.5	5.0	5.0	0	5.0	5.0										
18	0.5	0.5	5.0	5.0	1.3	4.9	4.9										
19	0.5	0.5	5.0	4.9	2.4	5.0	0										
20	4.1	4.1	5.0	5.1	5.0	5.0	5.0										
21	2.1	2.1	4.9	0.9													
22	3.7	3.7	5.1	2.5													
23	2.4	2.4	1.0	2.0													
24	1.6	1.6	2.5	2.0													
25	2.4	2.4	2.0	2.5													
26	2.5	2.5	2.0	5.0													
27	5.0	5.0	2.5	5.0													
28	5.0	5.0	2.0	5.0													
29			2.3														
30			0														
31			0														
32			5.1														

	B	C	E
TR1	0.8	0	1.5
2	6.9	5.1	7.5

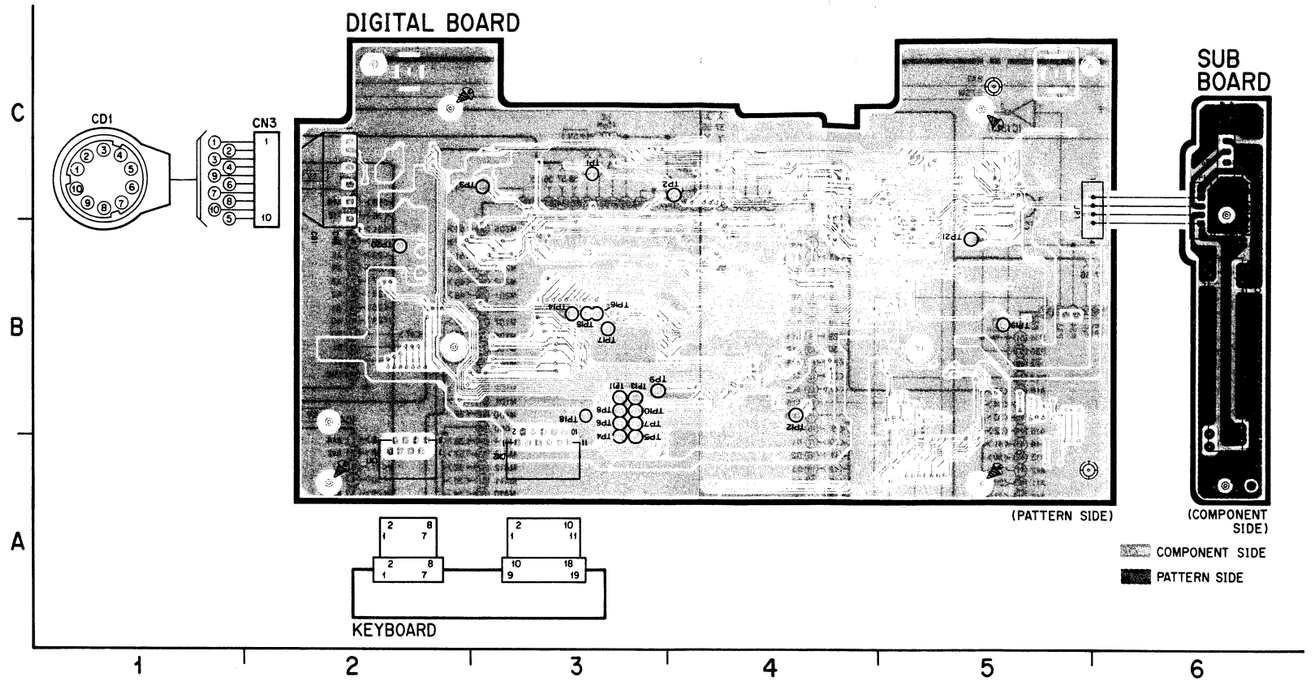
SCHEMATIC DIAGRAM



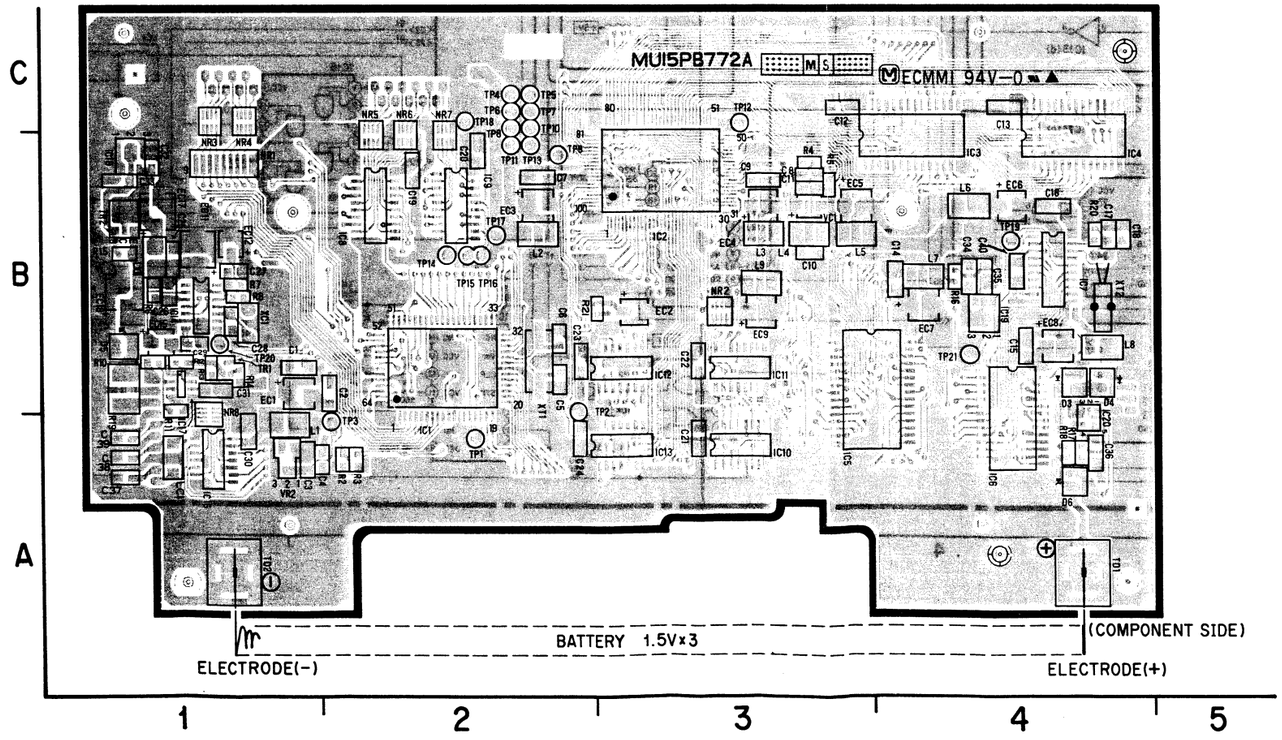
DIGITAL BOARD

IC1	D3	IC6	D7	IC11	A3	IC17	A5	TR2	A7
IC2	D5	IC7	B5	IC12	B3,B4,C5,E4	IC18	A7	D3	D9
IC3	E6	IC8	C2	IC13	A3,B3,E4	IC19	B8	D4	D9
IC4	D6	IC9	C2	IC14	A6	IC20	E8	D5	A7
IC5	E7	IC10	B3	IC16	B6	TR1	A5	D6	C9

CONDUCTOR VIEWS



DIGITAL BOARD

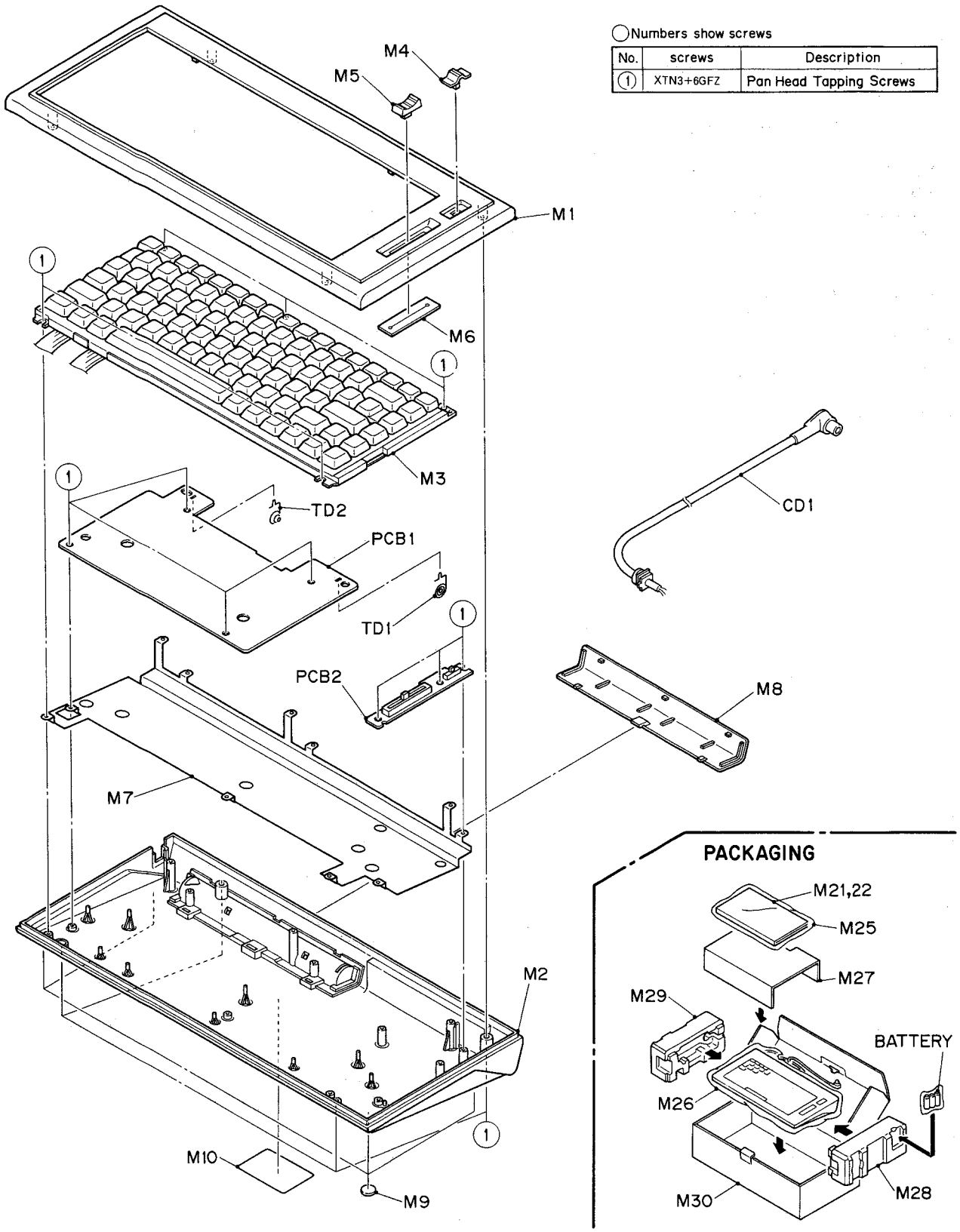


COMPONENT SIDE

DIGITAL BOARD

IC1	B2
IC2	B3
IC3	B4
IC4	B4
IC5	A3
IC6	A4
IC7	B4
IC8	B2
IC9	B2
IC10	A3
IC11	B3
IC12	B3
IC13	A3
IC14	B1
IC16	A1
IC17	A1,B1
IC18	B1
IC19	B4
IC20	A4
TR1	B1
TR2	B1
D3	B4
D4	B4
D5	B1
D6	A4

EXPRODED VIEW



◯Numbers show screws

No.	screws	Description
①	XTN3+6GFZ	Pan Head Tapping Screws

REPLACEMENT PARTS LIST

Important Notice

1. Components identified by"⚠" mark have special characteristics important for safety.
   When replacing any of these components,use only manufacturer's specified parts.
2. RTL : Retention Time Limited.

REF.NO.	PART NO.	DESCRIPTION
MISCELLANEOUS		
CD1	MU15CD768	Cable Connector Ass'y
M1	MU15CS707PA	Upper Cover
M2	MU15CS708PA	Bottom Cover
M3	ESU54TM017EA	Full Keyboard
M4	MU15TM711PA	Slide Knob(SW1)
M5	YWV5RB0335A3	Slide Knob(VR1)
M6	MU15ST712	Blind Sheet
M7	MU15SF710	Shield Plate
M8	MU15EC709PA	Battery Cover
M9	YWMU17GL327	Rubber Foot
M10	MU15LB713PB	Main Label

REF.NO.	PART NO.	DESCRIPTION		
DIGITAL BOARD				
PCB1(RTL)	MU15VPB411E	Printed Circuit Board Ass'y		
IC1	T90CM40F2601	IC		
IC2	LZ95J16	IC		
IC3.4	TC51832FL85	IC		
IC5	TC532000J009	IC		
IC6	LC3564QM10	IC		
IC7	TC8521AM	IC		
IC8.9	TC74HC273AF	IC		
IC10	TC74AC138F	IC		
IC11	TC74AC139F	IC		
IC12	YWUPD74HC08G	IC		
IC13	YWTC74AC04F	IC		
IC14	LA7217	IC		
IC16	YWUPD74HC08G	IC		
IC17	TC7W32F	IC		
IC18	S81250HGRDT1	IC		
IC19	S8054ALBLMT1	IC		
IC20	YWTC4S66F	IC		
TR1	2SB1218A-QR	Transistor		
TR2	2SB767R	Transistor		
D3	MA721	Diode		
D4	MA704	Diode		
D5	MA3150	Diode		
D6	MA3100-L	Diode		
R2.3	ERJ3GEYJ104	Carbon	100Kohms	1/16W
R4	ERJ3GEYJ682	Carbon	6.8Kohms	1/16W
R5	ERJ3GEYJ471	Carbon	470ohms	1/16W
R6	ERJ3GEYJ154	Carbon	150Kohms	1/16W
R7	ERJ3GEYJ392	Carbon	3.9Kohms	1/16W
R8.10	ERJ3GEYJ561	Carbon	560ohms	1/16W
R11	ERJ3GEYJ104	Carbon	100Kohms	1/16W
R12	ERJ3GEYJ473	Carbon	47Kohms	1/16W
R13	ERJ3GEYJ103	Carbon	10Kohms	1/16W
R14	ERJ3GEYJ472	Carbon	4.7Kohms	1/16W
R15	ERJ3GEYJ101	Carbon	100ohms	1/16W
R16	ERJ3GEYJ104	Carbon	100Kohms	1/16W
R17	ERJ3GEYJ471	Carbon	470ohms	1/16W
R18	ERJ3GEYJ104	Carbon	100Kohms	1/16W
R19	ERJ1WYJ220	Carbon	22ohms	1W
R20	ERJ3GEYJ334	Carbon	330Kohms	1/16W
R21	ERJ3GEY561	Carbon	560ohms	1/16W
VR2	EVM7JGA00B54	Variable Resistor	50Kohms	
NR1	EXBH9E104J	Block Resistor		
NR2	EXBV8V104J	Block Resistor		
NR3-8	EXBV8V101J	Block Resistor		

REF.NO.	PART NO.	DESCRIPTION	
C1-3	ECUX1H104KBW	Ceramic	0.1 μ F
C4	ECUX1H101JCG	Ceramic	100pF
C5.6	ECUX1H330JCG	Ceramic	33pF
C7	ECUX1H104KBW	Ceramic	0.1 μ F
C8	ECUX1H101JCG	Ceramic	100pF
C9	ECUX1H104KBW	Ceramic	0.1 μ F
C10	ECUX1H150JUN	Ceramic	15pF
C11	ECUX1H220JUN	Ceramic	22pF
C12-16	ECUX1H104KBW	Ceramic	0.1 μ F
C17	ECUX1H270JCG	Ceramic	27pF
C18	ECUX1H180JCN	Ceramic	18pF
C19-25	ECUX1H104KBW	Ceramic	0.1 μ F
C26	ECUX1E563KBX	Ceramic	0.056 μ F
C27	ECUX1H103KBG	Ceramic	0.01 μ F
C28	ECUX1H821JCX	Ceramic	820pF
C29	ECUX1H223KBX	Ceramic	0.022 μ F
C30-36	ECUX1H104KBW	Ceramic	0.1 μ F
C37-39	ECUX1H222KBN	Ceramic	2200pF
C40	ECUX1H104KBW	Ceramic	0.1 μ F
EC1	ECEV1CA220	Electrolytic	22 μ F16V
EC2	ECEV1HV010SR	Electrolytic	1 μ F50V
EC3-9	ECEV1CA220	Electrolytic	22 μ F16V
EC11	ECEV1CV470	Electrolytic	47 μ F16V
EC12.15	ECEV1HV010SR	Electrolytic	1 μ F50V
EC17.18	ECEV1CV470	Electrolytic	47 μ F16V
VC1	ECRJA030E12	Variable Capacitor	30pF
L1-3	ELJFB150KB	Coil	15 μ H
L4	ELJNA5R6JB	Coil	5.6 μ H
L5-10	ELJFB150KB	Coil	15 μ H
LC1	NFM41R10C102	EMI Filter	
XC1	YWCSB500F9	Ceramic Oscillator	
XT1	MU15XL794	Crystal Oscillator	
XT2	MU15XL795	Crystal Oscillator	
TD1	MU15TD714	Electrode(+)	
TD2	MU15TD715	Electrode(−)	
JP1	MU15JP773	Jumper Wire	
CN1	HLEM8R1	8-pin Connector	
CN2	HLEM11R10	11-pin Connector	
CN3	YWS10BPHKS	10-pin Connector	

SUB BOARD

PCB2	MU15PB772B	Printed Circuit Board	
VR1	EWANFEX05B54	Variable Resistor	50Kohms
SW1	ESD14314	Slide Switch	

REF.NO.	PART NO.	DESCRIPTION

ACCESSORY PARTS/PACKAGING PARTS

M21	YWV7SA1642A2	Conversion Key Label
M22	YWV8QA2784AN	Operating Instructions
M25	XZB26X40C05	Polyethylene Bag
M26	XZB35X50C05	Polyethylene Bag
M27	MU15PD791	Cushioning(top)
M28	MU15PD790A	Cushioning(right)
M29	MU15PD790B	Cushioning(left)
M30	MU15PF774PB	Packaging Case

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